PB82-203373

Final Environmental Impact Statement Proposed Wastewater Management Program Livermore-Amador Valley, Alameda County California (Supplement Summary)

Livermore-Amador Valley Wastewater Management Program, Berkeley, CA

Prepared for

Environmental Protection Agency
San Francisco, CA

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This is an environmental impact statement on the proposed wastewater management program of the Livermore-Amador Valley Water Management Agency (LAVWMA). The proposed project would consist basically of a 15.62 mgd ADMM (million gallons per day-average day maximum month) capacity pipeline to export secondarily treated effluent from the LAVWMA export pump station in Pleasanton to a connection with the planned East Bay Dischargers Authority (EBDA) interceptor located in San Leandro. Ultimatedly, the LAVWMA effluent would be discharged into San Francisco Bay.

The LAVWMA wastewater management program is being proposed in response to a mandate to remedy the problems associated with surface discharge from Livermore-Amador Valley wastewater treatment plants. It has been determined that the valley's wastewater poses a threat to the quality of groundwater downstream in the Niles Cone as well as local valley groundwater basins.

An effect of the proposed project is the accommodation of additional population growth and development by providing capacity in excess of present needs. The principle secondary impact of the proposed project would be decreased air quality that would result from population growth associated with increases in vehicular traffic. The proposed project has been determined to be environmentally sound by EPA. Similarly, the State Water Resources Control Board (SWRCB) has determined that the proposed project is the most cost-effective solution to the existing wastewater discharge problem.

17. Document Analysis a. Descriptors
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Wastewater Disposal
Air pollution

b. Identifiers/Open-Ended Terms
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Amador Valley, CA
Environment Impact Statement
Secondary Effects
San Francisco, Bay

c. COSATI Field/Group

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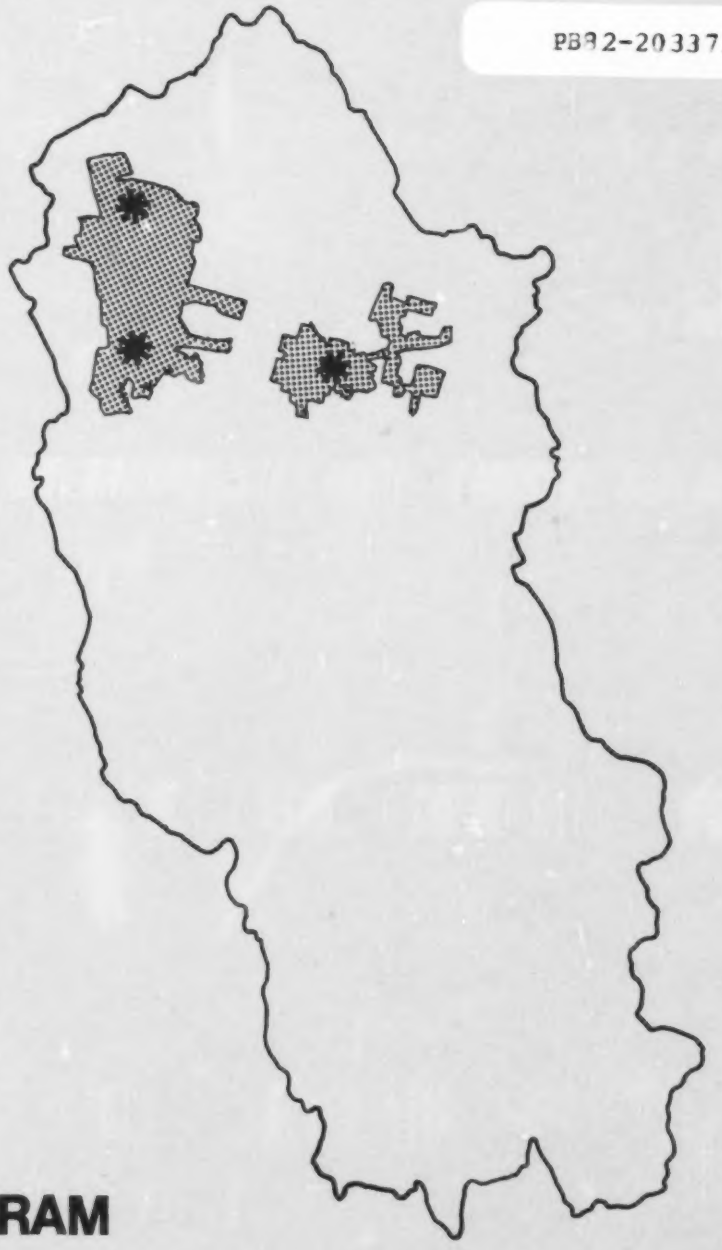
PB82-203373

SUMMARY SUPPLEMENT TO FINAL ENVIRONMENTAL IMPACT STATEMENT



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LIVERMORE-AMADOR VALLEY WASTEWATER MANAGEMENT PROGRAM

SUMMARY - SUPPLEMENT TO
FINAL ENVIRONMENTAL IMPACT STATEMENT
PROPOSED WASTEWATER MANAGEMENT PROGRAM
LIVERMORE-AMADOR VALLEY, ALAMEDA COUNTY, CALIFORNIA
C-06-1031-010 SCH 740 715 05 SEPTEMBER, 1977

PREPARED BY:

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To All Interested Agencies, Public Groups, and Concerned Individuals:

The following Summary of the Supplement to the Final Environmental Impact Statement for the Livermore-Amador Valley Wastewater Management Program is hereby submitted for your information. The supplement and summary contain additional information to that contained in the Final Environmental Impact Statement (EIS). This information was obtained after the completion of the Final EIS and does not change the impacts of the project. This supplement has been prepared in compliance with the National Environmental Policy Act of 1969 (Public Law 91-190), and implementing regulations by the Council on Environmental Quality and the Environmental Protection Agency.

I would like to call attention to the fact that in the process of summarizing the Final EIS Supplement, much of the detail necessary to explain and support the Summary's statements and conclusions was a necessity not presented. While the Summary is as clear and accurate as possible within this limitation, I would like to encourage those persons desiring a complete presentation of EPA's analysis, conclusions and recommendations to review the complete Supplement to the Final Environmental Impact Statement at the locations cited below.

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Livermore, California 94550

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Dublin, California 94566

Livermore Municipal Library
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San Francisco, California 94111

Please bring this notice to the attention of all
persons who would be interested in this matter.

Sincerely,

Richard A. Coddington for

Paul De Falco, Jr.
Regional Administrator

TABLE OF CONTENTS

	PAGE
Purpose	1
Background of EIS	1
Project Description	2
Project Modifications	11
Project Costs and Funding	12
Scope and Data Sources	12
Alternative Projects Considered	12
Potential Impacts of the Selected Project	13
Mitigation of Primary Impacts	18
Conclusion	21

LIST OF FIGURES

NUMBER		PAGE
1	Regional Setting	3
2	Pipeline Route	4
3	Pipeline Route	5
4	Pipeline Route	6
5	Pipeline Route	7
6	Pipeline Route	8
7	Index Map - LAVWMA Pipeline Route	9
8	Legend for Pipeline Route Maps	10

PURPOSE

The purpose of this document is to provide a summary of an updated environmental impact assessment of the Livermore-Amador Valley Water Management Agency's (LAVWMA) wastewater management program. The three specific objectives of the supplement are to (1) assess in more detail the primary impacts associated with the construction and operation of the proposed wastewater effluent export pipeline; (2) disclose mitigation measures that have been adopted as resolutions by the members of LAVWMA and will be included as conditions to grant funding by EPA and the State Water Resources Control Board; and (3) present the results of an environmental impact assessment of additional wastewater management alternatives that LAVWMA had investigated subsequent to the publication of the Final Environmental Impact Statement (EIS) in August 1976.

This document is not meant to be a complete environmental impact statement. It is a supplement to the previously published Draft EIS (November 1975) and the Final EIS (August 1976). The supplement is based on the more detailed LAVWMA Facility Plan (Carollo Engineers, 1976) and a report on reclamation-reuse and export alternatives (CH2M-Hill, March 1977).

BACKGROUND OF EIS

As stated above, this report is a summary of the third volume associated with the environmental impact analysis of the LAVWMA wastewater management program. The first volume, the Draft EIS, contains the full environmental inventory of the LAVWMA study area and an environmental impact evaluation of each of six viable alternatives. The principal task of the Draft EIS was to evaluate various wastewater management alternatives and recommend the most environmentally acceptable. It was also the task of the Draft EIS to address the secondary impacts of an upgraded and expanded wastewater management system, particularly with regard to air quality in the Livermore-Amador Valley.

The Final EIS was published following a public review period of 45 days and a subsequent public hearing on the Draft EIS. The Final EIS contains written responses to comments received on the Draft EIS. It also delineates the primary environmental

impacts associated with the construction and operation of the Livermore Interceptor component of the LAVWMA wastewater management program and suggests possible mitigation measures. The Livermore Interceptor is planned to transport wastewater effluent from the Livermore Water Reclamation Plant across the valley to the proposed LAVWMA export pump station.

Normally, the Final EIS is the final publication in the EIS process. However, the voters' rejection of a November 1976 local ballot bond measure for the LAVWMA project, together with subsequent corrections in the estimated project costs, public opposition to the selected project, and the concern over potential increases in operating costs, prompted LAVWMA to authorize an investigation of additional alternatives. These alternatives included an effluent pipeline northward to a Suisun Bay discharge and a pipeline through Niles Canyon to a connection with the planned East Bay Dischargers Authority (EBDA) Interceptor at Alvarado. In addition, a previously rejected alternative consisting of a pipeline through Niles Canyon with a discharge into San Francisco Bay just north of the Dumbarton Bridge was re-evaluated. An environmental assessment of these alternatives was made and a preliminary report was distributed to LAVWMA and appropriate review agencies on March 24, 1977. That report is reproduced as Appendix A of the supplement.

Concurrently with the environmental assessment, an engineering and economic feasibility study of 66 combinations of alternative export pipeline routes and reclamation possibilities was conducted and submitted to the LAVWMA Board on March 24, 1977 (CH2M-Hill, 1977). A summary of this report is reproduced as Appendix B in the supplement.

Upon review of the environmental and engineering reports on the alternatives, LAVWMA decided that the previously selected project (i.e., an export pipeline across Boehmer Summit to a connection with the planned East Bay Dischargers Authority [EBDA] Interceptor) was still the most cost-effective.

PROJECT DESCRIPTION

The regional setting of the LAVWMA study area and the proposed project is shown in Figure 1. The basic components of the export system that are evaluated in this summary consist of two regulating reservoirs that would receive effluent from the VCSD Treatment Plant, a pump station to pump the effluent over Boehmer Summit, and the actual export pipeline that would transport the effluent to the EBDA Interceptor for ultimate discharge into San Francisco Bay.

Maps of the proposed route are contained in Figures 2 through 6; an index map is contained in Figure 7. Larger scale (1 inch = 50 feet) air photos and topographic maps for the entire pipeline route will be contained in the contract documents. Although these documents are not expected to be completed before September 1, 1977, the route maps can be reviewed prior to this date by contacting the Association of Bay Area Governments (ABAG) in Berkeley, California.

From the pump station at the east end of the pipeline, the proposed route crosses Interstate 680 (I-680) to the west, then proceeds northward along the west side of I-680 near to the I-680 and I-580 interchange. It then turns westward across open fields, parallel to I-580, around the Foothill Road

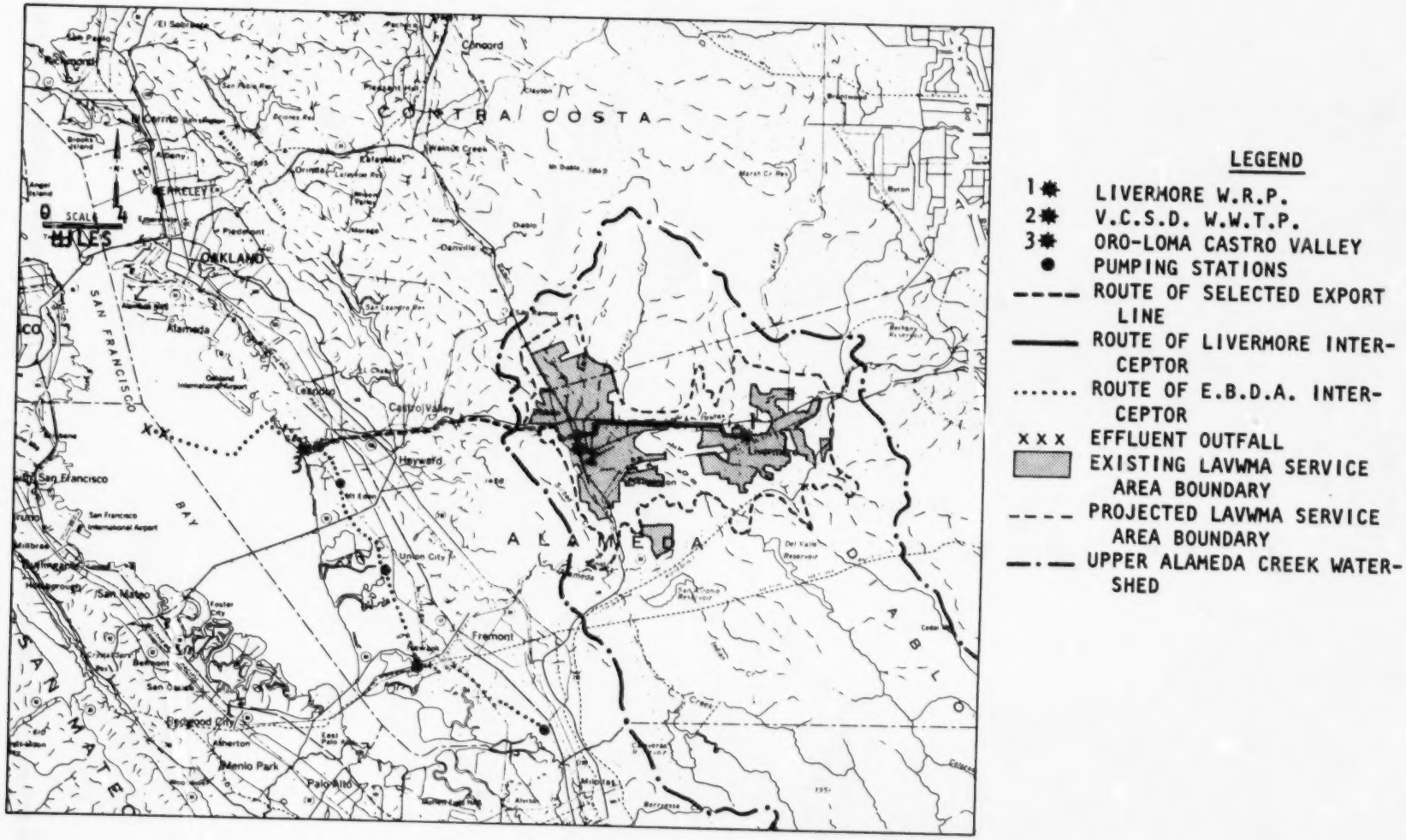

FIGURE 1 REGIONAL SETTING

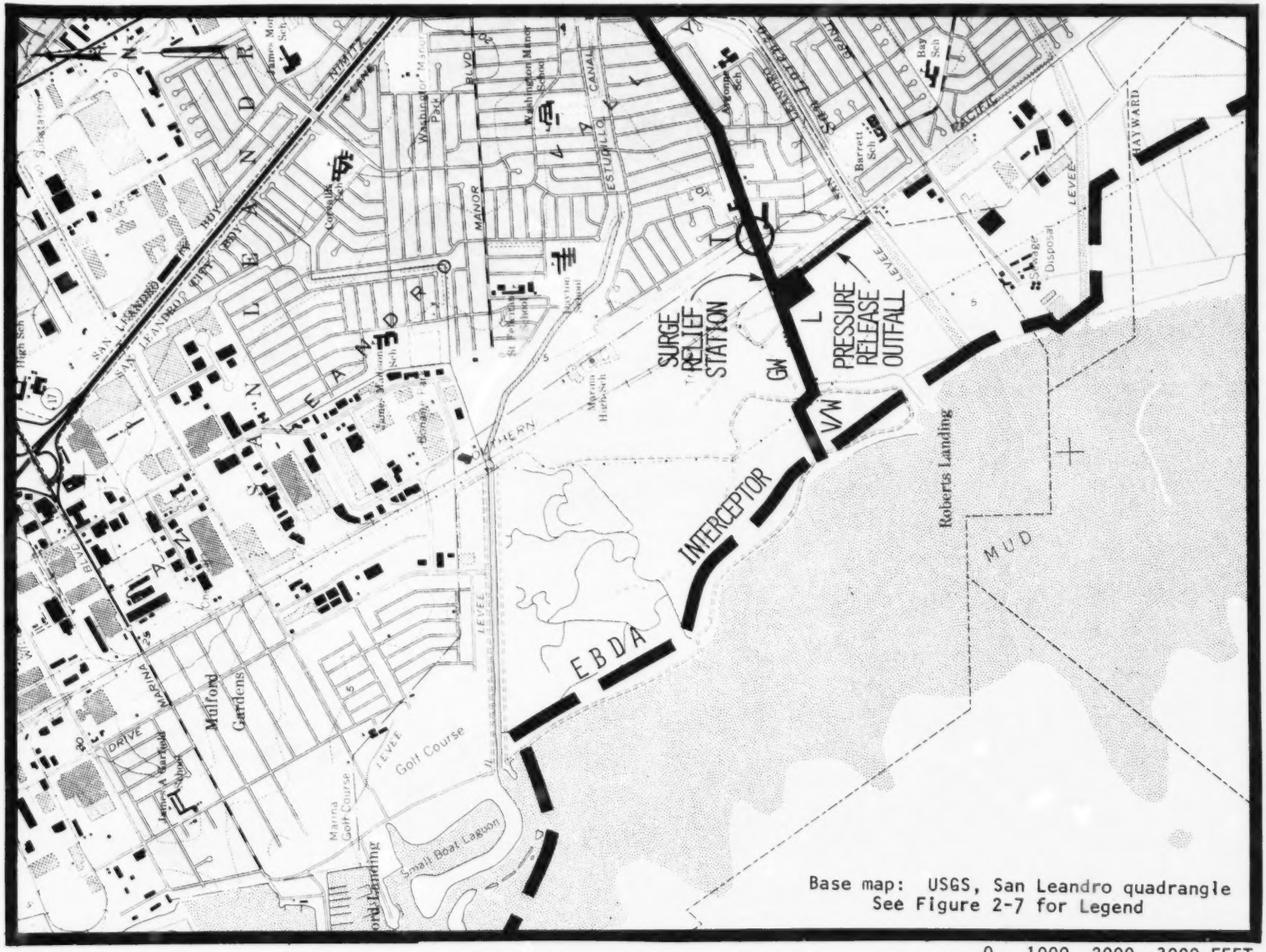

FIGURE 2 PIPELINE ROUTE

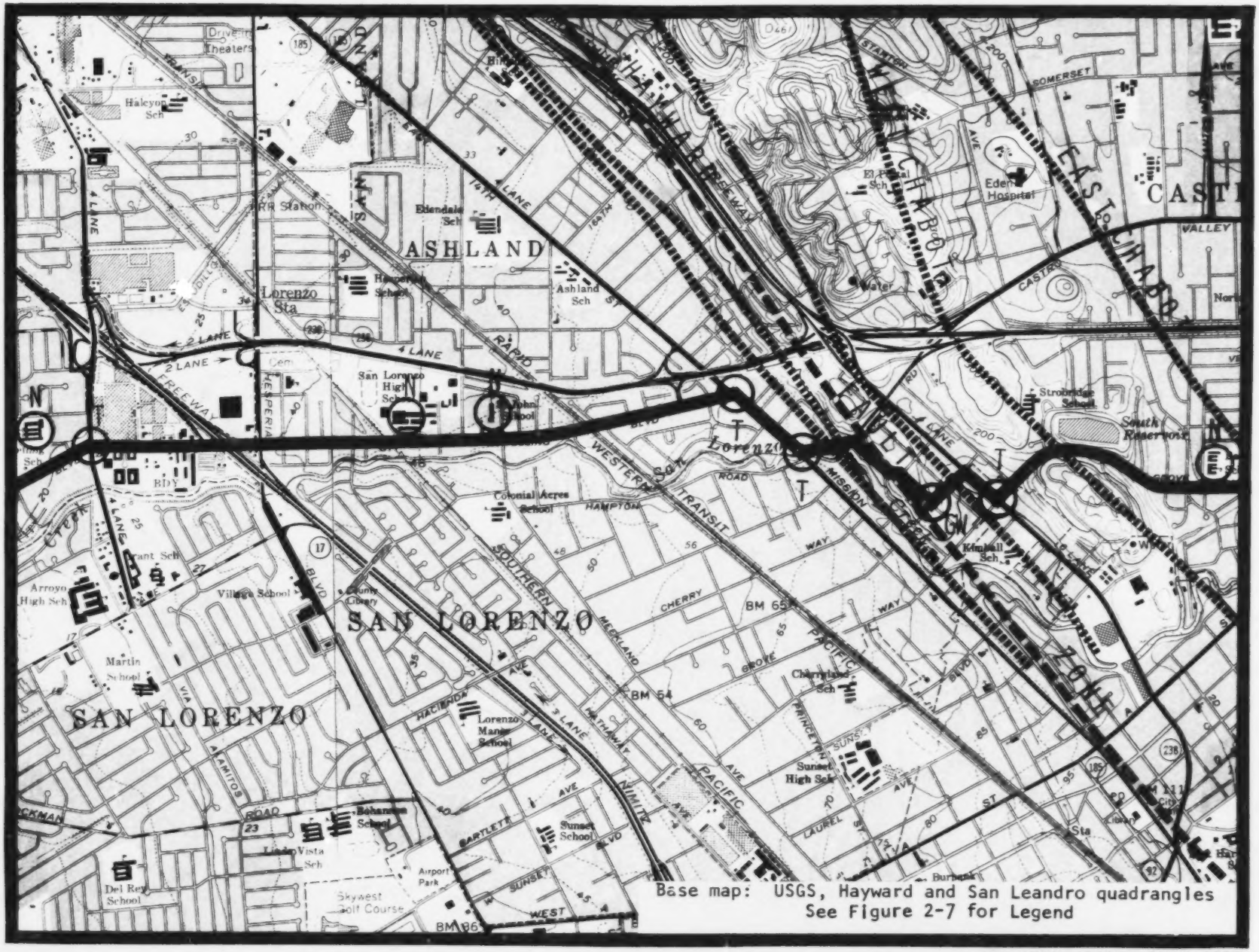

FIGURE 3 PIPELINE ROUTE

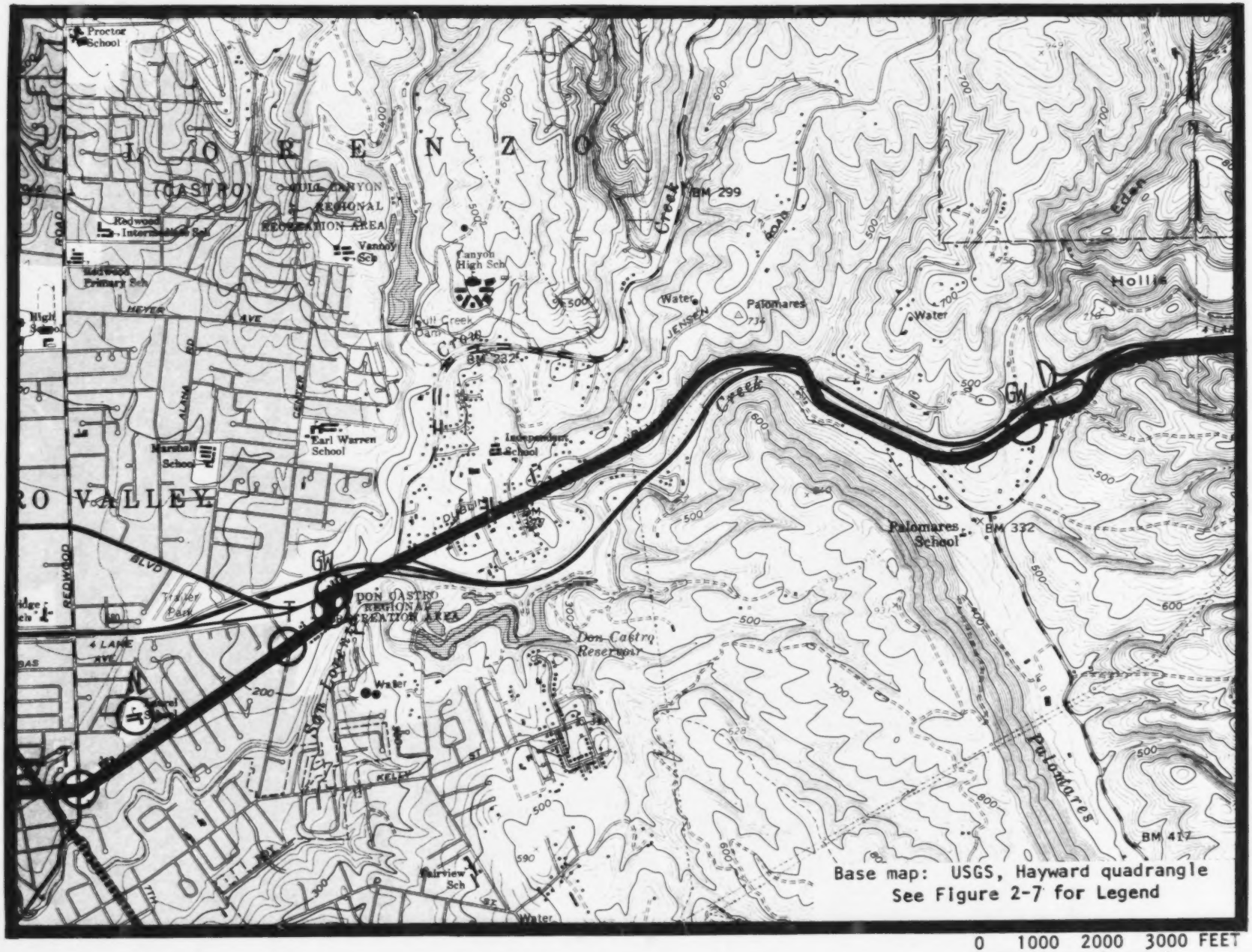

FIGURE 4 PIPELINE ROUTE

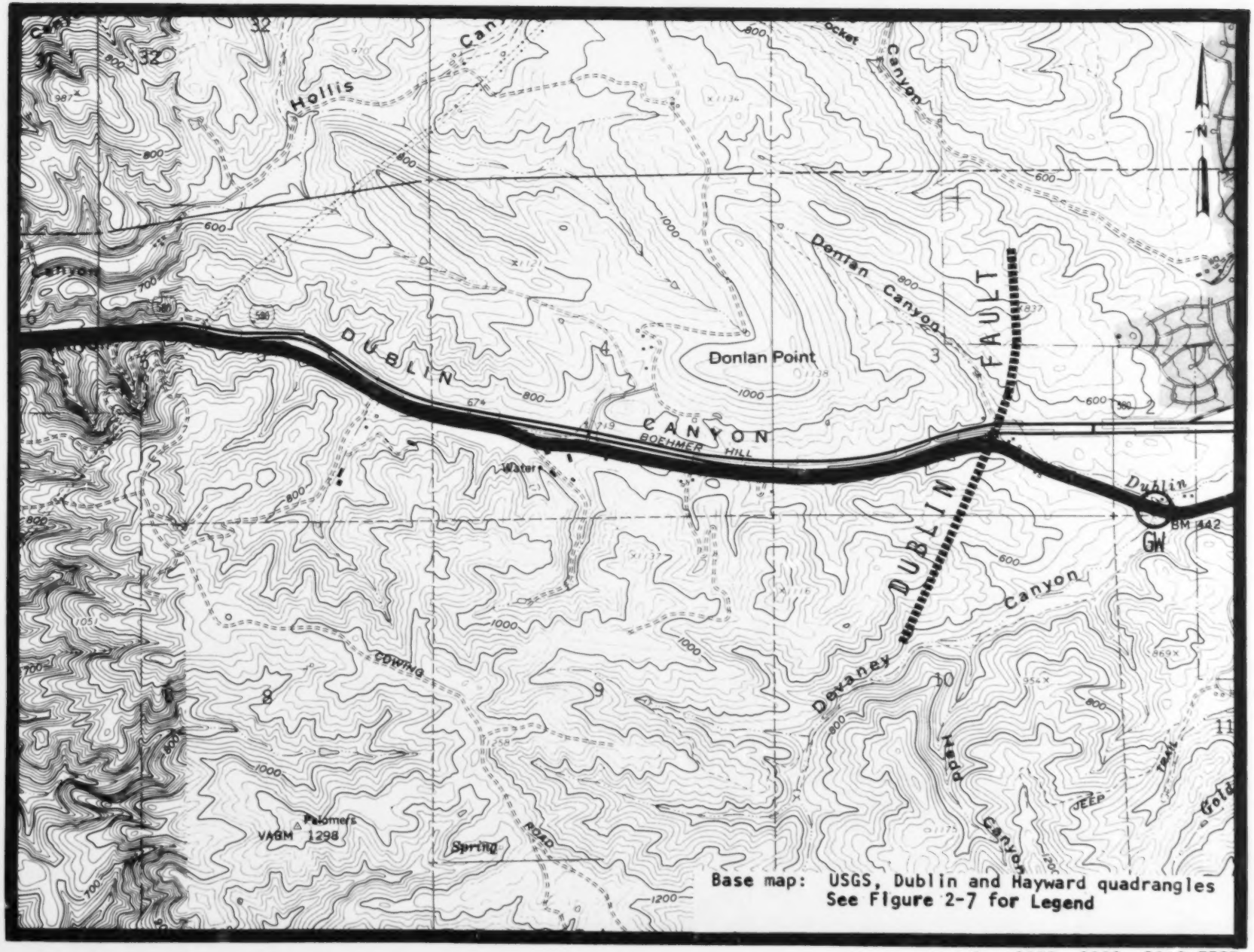

FIGURE 5 PIPELINE ROUTE

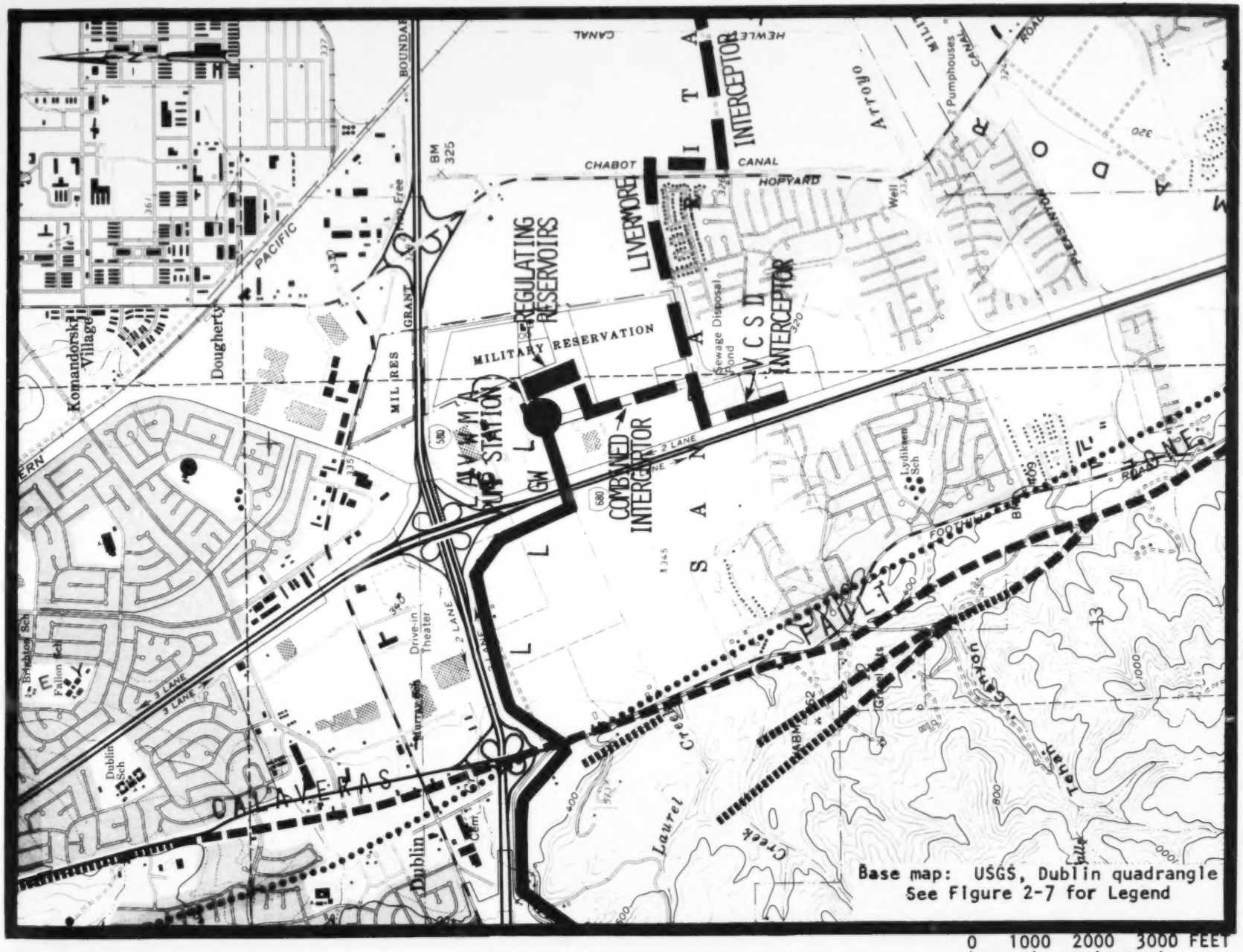

FIGURE 6 PIPELINE ROUTE

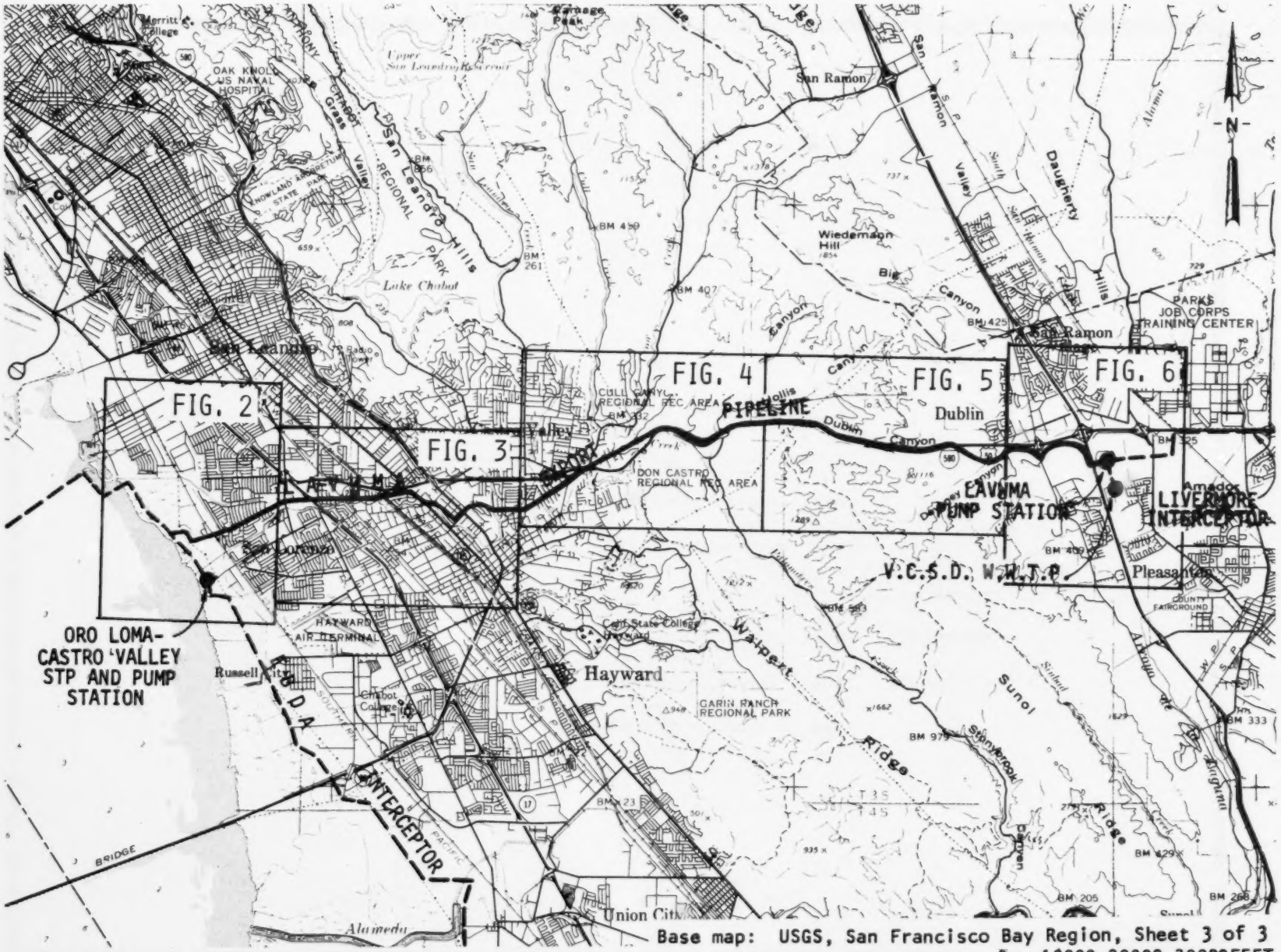

FIGURE 7 INDEX MAP – LAVWMA PIPELINE ROUTE

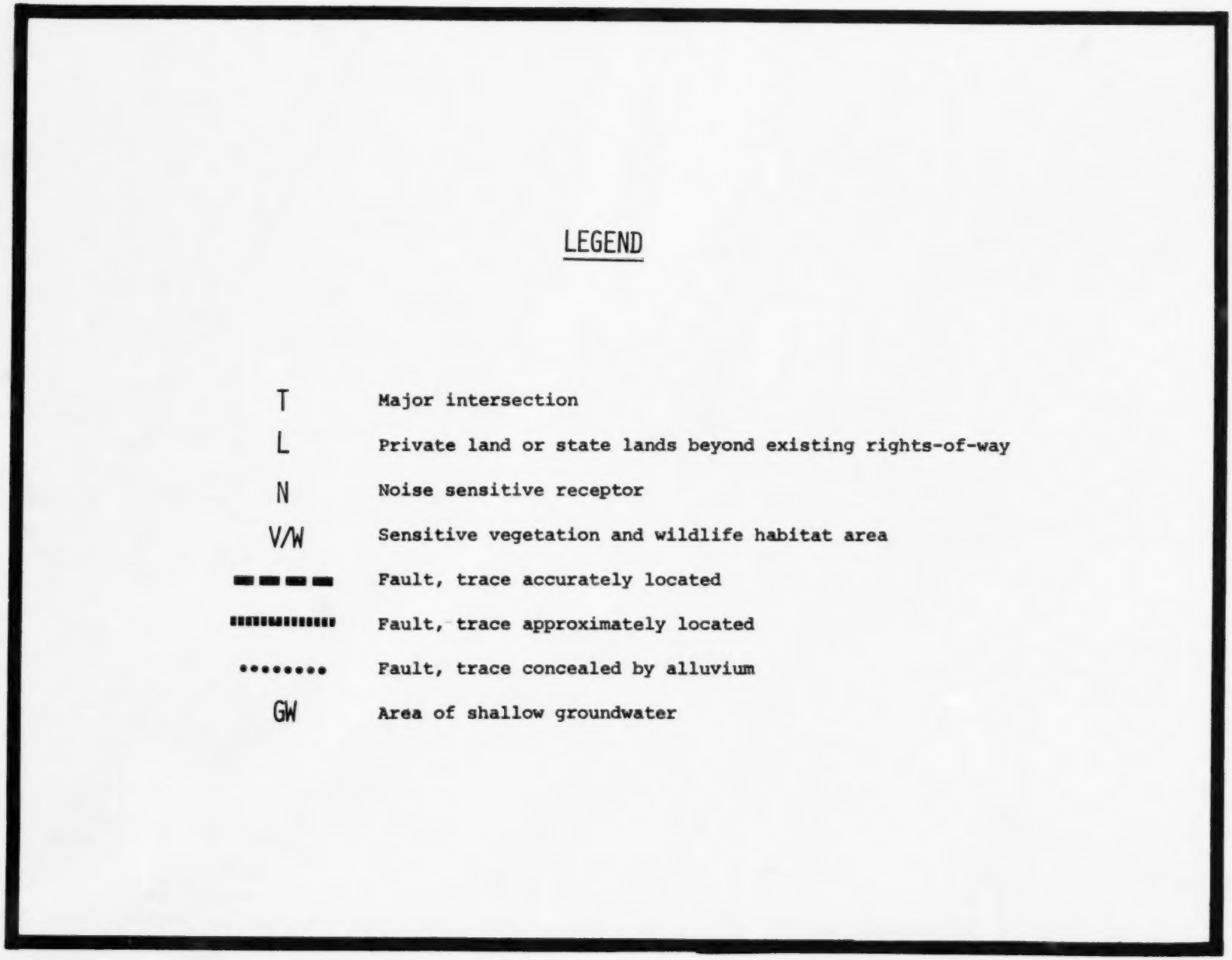

FIGURE 8 LEGEND FOR PIPELINE ROUTE MAPS

interchange, along Dublin Road, and into the right-of-way of the new frontage road currently under construction by Caltrans on the south side of I-580. The pipeline route follows the new frontage road over Boehmer Summit, to Eden Canyon Road. From this point it continues down East Castro Valley Boulevard to a point just west of Crow Creek where it turns south onto Grove Way in Castro Valley. From there the route proceeds through the urban areas of Castro Valley, San Lorenzo, and San Leandro, along Grove Way to Foothill Boulevard, Apple Avenue, Ocean View Avenue, Birch Street, Mattox Road, Mission Boulevard, Lewelling Boulevard, across open, filled marshland to the EBDA force main near the shoreline of San Francisco Bay.

From an engineering design perspective, the export pipeline can be divided into two sections: a force main from the LAVWMA pump station to Boehmer Summit; and a gravity-flow line from the summit to the junction with the EBDA force main at the west terminus of the line. The total length of the export pipeline is approximately 81,260 feet (nearly 15-1/2 miles). The force-main section would consist of 19,260 feet of 36-inch diameter pipe. The gravity-flow section would consist of approximately 62,000 feet of pipe ranging in diameter from 24 to 30 inches. The total static lift, or difference in elevation from the regulating reservoir low water level to Boehmer Summit, is about 445 feet. The difference in elevation, or head, between Boehmer Summit and the western end of the pipeline is about 745 feet.

Appurtenances to the pipeline would include a pump station and regulating reservoirs at the eastern end of the line, access manways along the pipeline, and an emergency surge relief, sampling, and metering station near the western end of the line. Two regulating reservoirs are planned to receive secondary effluent from the Livermore Water Reclamation Plant and the VCSD Wastewater Treatment Plant (see Figure 5). Normal operation of the system would utilize one reservoir for working storage and one reservoir for emergency storage. The function of the regulating reservoirs is to provide flow equalization storage of the inflows to the system, thus keeping the pumps and pipeline operating at design capacity.

Access manways would be located at approximately 4,000- to 8,000-foot intervals along the pipeline. These manways would contain air and vacuum valves.

The emergency surge relief station near the western terminus would include a small building (approximately 10 x 12 feet) that would house an automatic sampling device, a flow meter and pressure release valves. The pressure relief valves are included as a safety feature to protect the integrity of the LAVWMA line if the connection into the EBDA line is cut off for some reason. The discharge from the pressure release valves would occur only in an emergency and would be conveyed to the San Lorenzo Creek by a 24-inch pipeline (see Figure 2).

PROJECT MODIFICATIONS

Since the publication of the Final EIS in August 1976, the design capacity of the export pipeline has been reduced from 19.72 mgd-ADMM (million gallons per day-average day/maximum month flow) to 15.62 mgd-ADMM. The reduction in the pipeline design capacity was the result of LAVWMA's decision

to eliminate 4.10 mgd of reserve capacity for industrial users. This additional capacity would not have been eligible for federal and state funding. Thus, it should be noted that Table 4-2 of the Final EIS is now obsolete, and the 1998 capacity requirements for each of the three LAVWMA jurisdictions would be as follows: Livermore, 6.62 mgd; Pleasanton, 4.87 mgd; and VCSD, 4.13 mgd.

PROJECT COSTS AND FUNDING

The estimated total cost of the project is $38 million. Except for land, right-of-way, bond, and most legal costs, project costs are eligible for 87 1/2 percent funding through federal and state grant programs -- 75 percent from EPA and 12 1/2 percent from the SWRCB. The remaining costs would be funded locally through issuance of revenue bonds. The annual operating and maintenance costs for the proposed project would be $354,000 in 1980 and $737,000 in 1990 (CH2M-Hill, 1977; Table 4-1).

The State Water Resources Control Board (SWRCB), which is the administrator for the Clean Water Grant program, has issued a concept approval letter to LAVWMA for step 2 (design phase) funding. Step 3 (construction phase) approval for funding is anticipated on or before September 30, 1977, following a review of the project design.

SCOPE AND DATA SOURCES

The environmental assessment of the primary impacts of the proposed export pipeline was based on a review of published literature and communications with appropriate agencies and organizations. A list of persons and organizations contacted and reference material used is included as appendices D and E respectively in the full Supplement. In addition to the above sources of information, field surveys of the pipeline route were made to examine the biological resources (URS Company, 1976), the geological conditions (Harding-Lawson, 1976), and the archeological resources (Holman-Chavez, 1976). A copy of the geologic report is available for review at the offices of ABAG in Berkeley and at the Valley Community Services District office in Dublin. The archeological report can be reviewed at the San Francisco office of EPA, the State Water Resources Control Board in Sacramento, the State Office of Historic Preservation (Department of Parks) in Sacramento, or at the Treganza Museum, San Francisco State University.

ALTERNATIVE PROJECTS CONSIDERED

In addition to the previously mentioned additional alternatives that were evaluated following the November 1976 election, 15 wastewater management alternatives were considered in the initial stage of the screening process. These were reduced to five viable alternatives on the basis of engineering and economic feasibility. The five viable alternatives which were then evaluated for their environmental impacts included (1) treatment and export to South San Francisco Bay; (2) treatment and export to East Bay Dischargers Authority Interceptor (ultimately the selected project); (3) treatment and export with discharge to San Lorenzo Creek; (4) treatment (including demineralization) and local discharge; and (5) impoundment and reuse for irrigation with wet-weather release of excess water (salt routing). The impacts of each of these alternatives have been discussed in the Draft EIS.

POTENTIAL IMPACTS OF THE SELECTED PROJECT

In most instances, the impacts created by the export pipeline would be temporary, restricted to the actual construction phase of the project. Such impacts include traffic disruption, construction noise and dust, and the temporary displacement of wildlife or the temporary destruction of existing vegetal cover. However, some construction-related impacts would be long-term or permanent. Examples of long-term impacts include consumption of mineral resources, destruction of wildlife and possible disruption of buried archeological or historical remnants.

Secondary impacts of the entire wastewater management program are discussed in the Draft EIS (November 1975), and the primary impacts of the Livermore Interceptor component of the program are discussed in the Final EIS (August 1976).

Land Use

During the construction stage of this project, a temporary 65-foot right-of-way would be needed to maneuver construction equipment. In most cases, existing streets would provide adequate space. However, there may be locations where this easement must encompass front yards or front parking lots, and if this is the case, property owners would be compensated for a temporary easement. The project engineers have not yet determined if any specific locations would be affected in this way.

Another impact of the construction of this project would be the necessity to purchase 25-foot-wide easements from the private owners whose properties are crossed by the pipeline (see Figures 2, 4, and 6). As these properties are currently vacant, and as there are no immediate plans for the development of these properties, the construction activity would only temporarily impact land use.

Emplacement of the pipeline would not displace any existing structures. The entire pipeline route lies within existing street and road rights-of-way or across vacant land.

Traffic

The pipeline route would cross I-680, I-580, State Highway 17, the Western Pacific Railroad, the Southern Pacific Railroad, and would run along or cross several major arterial routes within the communities of San Leandro, San Lorenzo, Castro Valley, and Pleasanton. Crossings of the Interstate freeways, Highway 17, and the railroads would all be accomplished by boring and jacking or using existing undercrossings, therefore no traffic disruption would result. Construction along streets and roadways is expected to proceed in 1- to 2-block increments. Each increment is expected to disrupt traffic for approximately 1 week.

Major arterial streets along which the pipeline would disrupt traffic are, from east to west, East Castro Valley Boulevard, Grove Way, Foothill Boulevard (Highway 238), Mattox Road, Mission Boulevard (Highway 185), and Lewelling Boulevard. All of these major roadways are presently near or at capacity during peak hours (see Figures 2, 3, and 4).

Traffic disruption at major intersections along the route would be particularly severe especially at

peak traffic times. These intersections include, from east to west, Grove Way and Center Street, Grove Way and Redwood Road, Grove Way and Foothill Boulevard, Foothill Boulevard and Apple Street, Mattox Road and Mission Boulevard, Mission Boulevard and Lewelling Boulevard, Lewelling Boulevard and Hesperian Boulevard, Lewelling Boulevard and Washington Avenue, and Lewelling Boulevard and Wicks Boulevard.

Noise

Residences along much of the pipeline route are within 50 feet of the roadway and would be exposed to the 84 to 88 dBA noise levels during the construction period. Assuming that people inside residences would be exposed to noise levels that are 15 to 30 dBA less than those levels on the outside, the indoor noise levels should be below the minimum hearing damage risk level of 70 dBA except during unusual circumstances. Indoor noise levels would most likely exceed 60 dBA throughout much of the construction period, however, creating significant speech interference and annoyance.

Schools along the pipeline route would also be adversely affected. Outdoor activities at Laurel School, Baywood School, St. John School, San Lorenzo High School, and Lewelling School would be affected significantly, especially in those areas close to the roadway (see Figures 3 and 4). School buildings at San Lorenzo High School and Baywood School are within 50 and 100 feet of the construction site, respectively. Indoor noise levels would therefore exceed the 45 dBA limit of moderate speech interference at all times in those buildings close to the roadway, and would probably exceed the 60 dBA level of significant speech interference some of the time. Since the dBA level drops approximately 6 dBA as distance from the source doubles, the other schools should be less affected, although construction noise would most likely be noticeable.

Adverse noise effects would occur only during the construction period. It is estimated that each construction stretch (about 1 to 2 blocks) would take approximately 1 week to complete the heavy work, therefore that would be the approximate duration of the noise impact. As stated in the mitigating measures section, construction near sensitive receptors would have to be limited to daytime hours.

Air Quality

Dust generation is an unavoidable result of construction operations. Most of the pipeline, however, would be constructed on existing paved streets, thus minimizing dust generation since only a minimum amount of earth would be exposed. The only significant segment of the pipeline that would be constructed on open land is between the regulating reservoirs and Foothill Road at the eastern end of the route. Exposed earth and prevailing winds could create a dust problem that would interfere with traffic on I-680 and I-580 if corrective measures are not taken.

Pipeline construction on existing streets would create some temporary dust problems. The nearest sensitive receptors that would be adversely affected are residences along the street. Dust from digging operations and piled dirt could create nuisance conditions at nearby residences. Corrective measures can minimize the effect.

Biology

Potential impacts of the proposed export pipeline upon vegetation and wildlife are quite low and center primarily on the loss of pickleweed marsh and associated drier habitats adjacent to the marsh at the western end of the pipeline route. Construction and restoration of the pipeline route would probably destroy less than one acre of existing pickleweed marsh, salt grass, and coyote bush-grassland. Although this type of habitat appears highly disturbed and in the Bay Area is quite abundant, across the state, this habitat is rare and continues to disappear. The location of most of the route in this area would be within areas of existing fills above 5 feet above sea level. Construction throughout the remainder of the pipeline would not affect vegetation to any significant degree.

The impacts of the proposed pipeline upon the biota should be viewed in relationship to the overall proposed development for the area extending from the existing west end of Lewelling Boulevard. The proposed EDA-funded Project No. 9 would extend Lewelling Boulevard 2,800 feet to the west, through the area of pickleweed marsh. If this project is implemented the effects of the pipeline construction would be less important. The pipeline effects then become a matter as to the loss of vegetation productivity from the time of construction for the pipeline to that of the roadway.

Based upon surveys of the pipeline route, little if any direct damage to wildlife would occur along the entire pipeline. Construction activities and vegetation losses in the marsh area near the western terminus of the route would dislocate birds and some mammals. Some rodents would be destroyed, and some individuals of the endangered salt marsh harvest mouse may be threatened, however, the likelihood of encountering this species along the route would appear to be slight.

Normal operational aspects of the proposed pipeline would have virtually no adverse effects upon either vegetation or wildlife. Possible spillage of treated effluent along most of the route would enter the storm sewer systems or creeks. Spillage in the marsh area would flood the marsh area to the south of the pipeline. This event would probably resemble the effects of the winter rain flooding of the marsh. Repair of the pipeline leak or break would repeat the same effects upon the restored vegetation along the pipeline (e.g., generally grasses, weedy forbs, and some coyote bush).

Geology/Mineral Resources

In discussing the geologic problems associated with the construction and operation of the proposed export pipeline, a distinction is made between geologic hazards or limitations and geologic impacts. Geologic hazards and limitations refer to those aspects of the existing geological environment that could have impacts on the proposed project if they are not recognized and planned for in the design and construction of the project. In contrast, geologic impacts refer to the potential changes the project would incur on the existing geologic conditions along the pipeline route.

Geologic Hazards. According to the soil and geologic investigation for the export pipeline, the

potential hazards or limitations created by the geologic conditions along the pipeline route include fault displacement, hydrostatic uplift in areas of high groundwater, expansive soils, trench wall instability, soil settlement, and excavation difficulties (Harding-Lawson, 1976).

As shown in Figures 3 and 6, the pipeline would cross the Hayward and Calaveras Faults. Both of these faults are considered active and capable of horizontal (right-lateral) displacement during an earthquake. Such fault movement could cause the buried pipeline to rupture or crack. The potential impacts created by a pipeline leak or rupture are discussed later under Geologic Impacts.

Uplift pressure created by rising groundwater beneath the proposed pipeline and appurtenant facilities could be great enough to displace the pipe or structures upward, causing damage. Several areas along the project route exhibit shallow water table conditions (see Figures 2 through 6). The weight of the compacted trench backfill in general would offset the uplift pressure, but in areas of natural channel stream crossings, special backfill procedures would be needed to overcome the hydrostatic uplift.

Clay soils that have a high shrink-swell potential occur at the eastern and western ends of the pipeline route. Expansive soils offer the greatest problem at the eastern end of the pipeline route in the vicinity of the proposed pump station and regulating reservoirs. Special design measures will be required to protect the shallow foundations and slabs from the detrimental effects of the shrinking and swelling. Similarly, if a rigid lining is used for the reservoirs, it would be subject to cracking from expansive soil unless protective measures are employed.

Some trench wall instability problems can be expected in the urban areas of Castro Valley and San Leandro where deep alluvial soils exist and where vertical trench walls would be required in order to limit the width of the open trench and thus limit traffic disruption. Other potential problem areas occur at stream crossings where groundwater seepage would cause sandy soil to "run" unless the area is dewatered or continuous sheeting is used. In general, trench wall stability problems can be overcome by lessening the slope of the trench walls where space permits or by bracing or sheeting in areas where vertical side walls are necessitated.

The bay mud located at the western end of the pipeline route (west of Wicks Boulevard) is low in strength and highly compressible. Thus, these soils would be susceptible to compaction when additional loads (e.g., pipeline backfill, construction fill, and the weight of construction equipment) are added on them. Bay mud typically has a desiccated crust 3 to 4 feet thick which, during the dry season, will support moderate weight construction equipment, however, during the wet season, the crust becomes softened and loses this supporting capacity.

Most of the excavation for the pipeline would be accomplished with conventional earthmoving equipment, however, some localized areas of shallow rock in the vicinity of Apple Avenue and Ocean View Drive, along East Castro Valley Boulevard, and along the I-580 frontage road segment may require heavy ripping or blasting. In addition, a dragline or clamshell might be needed to excavate the soft bay mud.

Geologic Impacts. Geologic impacts that could be created by the construction and operation of the proposed export pipeline include induced soil compaction, increased erosion, seepage at regulating reservoirs, consumption of mineral resources, loss of topsoil, and disposal of excavated soils.

As was mentioned earlier, the soft clay soils, or bay mud, at the western end of the pipeline route are highly compressible. Thus, the extra weight of fill that would be required to support construction equipment would result in compaction of the underlying soils and settlement of the ground surface. However, since the extension of Lewelling Boulevard parallel to the pipeline route just to the north is being considered by the City of San Leandro, the potential impact caused by the construction of the pipeline would be a moot point if the Lewelling Boulevard extension is completed before the pipeline. The construction of the Lewelling Boulevard extension would not only cause but would actually require the underlying sediment to be compacted prior to the emplacement of the street surface.

Exposed earth created by excavation in and near drainage channels and in areas of slope would result in increased erosion and off-site siltation especially during the rainy season. Areas of highest potential for increased erosion during construction activities include the upland portion of the route (along East Castro Valley Boulevard and the southern frontage road of I-580) in general, and at the crossings of natural streams (Crow Creek, Eden Creek, and Devaney Creek).

Increased erosion could also occur during the operation of the export pipeline. Ruptures or leaks in the pipeline could result in underground erosion with possible damage to adjacent roadbeds. Additional erosion of the slopes of the regulating reservoirs would occur, particularly during maintenance operations if the reservoirs are not lined.

Seepage of treated effluent could occur through the bottom and sides of the regulating reservoirs if they are not lined or if cracks develop in the lining. However, the volume of seepage would be small because of the low permeability of the natural clay soils at the site and because the highest reservoir operating level (elevation 324.5 feet) is nearly at the lowest groundwater level (elevation 312.5 feet) expected during a dry year.

Sand and gravel would be required as pipe bedding material and trench backfill. For impact evaluation purposes, it is assumed that imported fill material would be required for the entire pipeline route. However, some of the excavated soils would probably be suitable for fill, provided the appropriate county or city backfill compaction requirements are adhered to. Final bedding and backfill requirements will have to be evaluated when the type of pipe has been determined. In general, pipeline bedding material would consist of a thin layer of gravel or crushed rock. Imported trench backfill would consist of sandy or granular material that would meet relative compaction requirements.

Various other mineral resources would be consumed in the fabrication of materials and construction of appurtenant facilities for the export pipeline system. The 19,300 feet of force main and the 62,100 feet of gravity-flow pipeline would be constructed out of ductile iron, concrete cylinder pipe (cement mortar lined and coated steel cylinder pipe), or asbestos cement pipe. In addition, steel

pipe would be used at the pump station discharge manifold where sharp transitions and unique pipe lengths are required.

Asphalt and aggregate for roadbase would be consumed in the construction of an entrance road and access road around the regulating reservoirs and pump station. Asphalt concrete or reinforced concrete would be required as a reservoir liner. Steel would be consumed for fencing, and surge tanks. Various metals would be consumed for pumps and valves, and for the construction of the pump station building.

Although part of the organic soils excavated for the pipeline trench could be stockpiled and used as topsoil cover, other unsuitable material would have to be disposed of away from the construction site. Ultimate disposal of this material would be determined at the time of construction. Much of it may be suitable as fill at construction sites where the compaction requirements are not as stringent as for utility line backfill in urban areas. Other organic or clay soils of high moisture content would probably have to be disposed of at a sanitary landfill.

Archeology and Historical Sites

The absence of any surface indications and the generally disturbed character of the pipeline route reduce the potential for encountering important archeological remains. However, the presence of one known site within a quarter mile of the pipeline route and the general trends of human habitation in the area indicate that some potential for subsurface disturbance may yet exist in certain portions of the route.

The proposed project pipeline does not pass through any potential or currently registered site or landmark structure under state or federal protection. However, excavations in the urban areas may penetrate buried historic remains. Portions of the Roberts Landing facilities and associated remains may be encountered in the area west of the Southern Pacific Railroad tracks and the end of Lewelling Boulevard.

These possible disturbances of archeological and historic remains are adverse effects if they either destroy the remains or the context of the remains. However, with proper monitoring of the excavations in several areas and proper controlled excavation and removal of the remains, the 3- to 4-foot wide trench may provide substantial information regarding the location and content of subsurface archeological site and historic foundation and other associated remains.

The planned EBDA Interceptor to which the proposed pipeline would connect would also pass directly across the Roberts Landing site and may similarly either produce adverse effects if the excavation is uncontrolled or substantial benefits if archeological and historic remains are properly documented and/or removed for preservation.

MITIGATION OF PRIMARY IMPACTS

The following discussion lists those mitigation measures that have been agreed upon by EPA, SWRCB, and LAVWMA. These measures would be incorporated as Step 3 (construction phase) grant conditions and would be written into construction plans and specifications. These mitigation measures apply to the

potential primary impacts associated with the construction and operation of the proposed LAVWMA export pipeline. Mitigation measures adopted for the construction and operation of the Livermore Interceptor component of the LAVWMA program were presented in the Final EIS.

Proposed measures to mitigate potential secondary impacts associated with the entire wastewater management program were presented in Section 4 of the Draft EIS. The feasibility of implementing these secondary impact mitigation measures was discussed in Section 5 of the Final EIS. Resolutions adopted by the members of LAVWMA, (City of Livermore, City of Pleasanton, and the Valley Community Services District) with regard to their role and position in the development of an Air Quality Maintenance plan are presented in Appendix C of the Addendum.

Land Use

The potential impact of the temporary 65-foot construction right-of-way on the front yards or parking lots of private landowners would be mitigated by the compensation of the landowners for the temporary easement. Similarly, the landowners of private properties traversed by the pipeline would be compensated for permanent 25-foot easements that would be required. Careful construction techniques and clean-up operations would be utilized to retain the current character of the lands crossed.

Traffic

Before the California Department of Transportation (Caltrans), the County of Alameda, the City of San Leandro, and the City of Pleasanton issue construction permits, they will define specific mitigating measures that will have to be implemented in order to minimize traffic disruption. Possible measures include limiting the construction period to off-peak traffic hours in the peak traffic direction, closure of as few lanes as possible, particularly during peak hours, night construction in non-residential areas, traffic control procedures (detours and/or flagmen), limiting the length of roadway affected at any one time (e.g., Alameda County requires no more than 600 feet of open trench), limiting the season of construction (e.g., avoiding peak holiday season traffic), and boring and jacking under critical traffic areas.

Noise

Noise generated during construction activities would be mitigated, particularly at the noise sensitive areas identified along the pipeline route, by utilizing engine mufflers and portable noise shields, and limiting construction near residential areas to daytime working hours.

Air Quality

Dust generation would be minimized by watering all exposed earth; limiting the length of pipeline under construction at any one time; and avoiding activity on extremely dry, windy days.

Biological Resources

Mitigation of the impacts of the proposed route on the small area of salt marsh at the western end of the pipeline would be accomplished by regrading

the finished cover of the pipeline trench and surrounding areas that might be disturbed by construction equipment to that of the surrounding marsh. Careful removal of the upper foot of soil, and stockpiling this material to the north side of the route, would allow the natural revegetation of the existing pickleweed plants over the construction area. Any stockpiled marsh vegetation would be kept moist, and would be replaced as quickly as possible. The California Department of Fish and Game (CDFG), the U.S. Fish and Wildlife Service, and the U.S. Army Corps of Engineers have all been contacted with regard to required permits and approval of mitigation measures.

Potential adverse impacts at creek crossings (Dublin, Devaney, and Crow creeks), would be mitigated by adhering to mitigation measures agreed to by the contractor and the CDFG. Pursuant to the California Fish and Game Code, sections 1601-1603, the LAVWMA engineer has contacted CDFG regarding all stream crossings. Applications for streambed alteration have been filed and mitigation measures have been established.

Much of the potential impact on the salt marsh at the western end of the pipeline route has been mitigated by realigning the route northward about 100 feet so that the trench would be excavated in existing fill of an unimproved road. Nevertheless, a permit from the Army Corps of Engineers, Regulatory Function Branch would be required for construction within the salt marsh. This permit would insure that spoils developed by the pipeline trenching would not be deposited within the salt marsh. Additionally, since the salt marsh is the habitat of the endangered salt marsh harvest mouse (Reithrodontomys rauiventris), the CDFG and the U.S. Fish and Wildlife Service have been contacted and mitigation measures agreed to if an individual of the salt marsh harvest mouse should be threatened.

Geology and Mineral Resources

In general, the best approach to insuring that potential geologic hazards and impacts are either avoided or minimized is to have a licensed soils engineer or engineering geologist present during construction activities in order to inspect the trenching and backfilling operations, and the installation of foundations and subdrains. These field inspections will permit the detection of variations in soil conditions that may require modifications of design. Also, field and laboratory tests would be conducted during construction to evaluate the quality of workmanship and materials used.

In order to minimize the damage to the pipeline should movement occur along the Hayward or Calaveras faults, recommendations presented in the Harding-Lawson Soil and Geologic Investigation will be followed.

Archeological/Historical Resources

To minimize potential adverse impacts, pipeline construction will be monitored by a qualified archeologist along segments of the route that have been identified as having a relatively high potential for buried archeologic remains.

CONCLUSION

As a result of the environmental analysis of the proposed export pipeline and alternatives, EPA concludes that the proposed project is environmentally sound and therefore proposes to offer grant assistance in the amount of 75 percent of eligible project costs, as determined by the SWRCB. Similarly, the SWRCB concludes that the proposed project is the most cost-effective solution to the watewater effluent problem, and proposes to offer grant assistance in the amount of 12 1/2 percent of eligible project costs. The SWRCB has previously affirmed its decision that project is the most cost-effective by approving Step 2 (design phase) grant of the Clean Water Grant Program.

In most instances, unavoidable impacts created by the export pipeline would be temporary and restricted to the actual construction phase of the project. Such impacts include traffic disruption, construction noise and dust, and the temporary displacement of wildlife or the temporary destruction of existing vegetal cover. However, some construction-related impacts would be long-term or permanent. Examples of long-term impacts include consumption of mineral resources and energy, destruction of wildlife and possible disruption of buried archeological and historical remnants.

With the exception of mineral resource and energy consumption, the above impacts can be reduced to relatively minor levels by adherence to the adopted mitigation measures.

Secondary impacts associated with increased population growth that could be accommodated by the proposed wastewater management program would be unavoidable. However, EPA believes the Air Quality Maintenance Planning process and ongoing local planning efforts will reduce the severity of these impacts. EPA believes the members of LAVWMA have shown good faith in their efforts to mitigate all impacts identified in the Draft EIS, Final EIS, and in the supplement.